

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 684054, CST 332a 208/1

PAO This is Apollo Control Houston at 68 hours 40 minutes 54 seconds now into the flight. Apollo 8 now 1128 nautical miles away from the Moon. Our current velocity reading 6467 feet-per-second. We've had a brief conversation, Jerry Carr has talked to Bill Anders aboard the Apollo 8 spacecraft regarding service propulsion system tank pressures and we're gonna play that conversation now.

SC Houston, Apollo 8. Over.

CAP COM Apollo 8, Houston. Go.

SC Roger. We're showing a fuel pressure of 167 in oughts of 163. Wondering, do you think there's a possibility of us having a transient pressure warning trip on fuel oughts to pressure at the beginning of the burn that would correct itself anomaly as we had a chance to pressurize. Over.

CAP COM Roger, understand. Will check, stand by.

SC Roger.

CAP COM Apollo 8, Houston.

SC Go ahead.

CAP COM Apollo 8, this is Houston. We've been reading fuel 173 ought 167 holding steady for a long period of time. We expect no caution and warning trip. Over.

SC Roger, understand.

PAO Apollo Control Houston. Meanwhile here in Mission Control Center our LOS clock, loss of signal clock, continues to count down. We now read MARK 15 minutes 26 seconds until that time that the Apollo 8 spacecraft will pass out of communications range over the backside of the Moon. And at 68 hours 42 minutes 50 seconds into the flight, this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 684712 CST 3:38a 209/1

PAO This is Apollo Control Houston at 68 hours 47 minutes and 12 seconds now into the flight of Apollo 8. Apollo 8 now 825 nautical miles away from the moon. Our velocity continuing its rise at a continuing increasing pace now. We read 6836 feet per second. At this time we are 10 minutes 29 seconds away from time of loss of signal. We've had no further communications with the crew who are no doubt quite busy as of this moment in preparation for their first lunar orbit insertion burn. 68 hours 48 minutes continuing to monitor, this is Apollo Control Houston.

END OF TAPE

Apollo 8 Mission Commentary, 12/24/68, 684900, 3:40am, 210/1

PAQ This is Apollo control Houston at 68 hours 52 minutes into the flight of Apollo 8. Apollo 8 now 5 hundred and 82 nautical miles away. The velocity reading 71 91 feet per second. We're some 5 minutes 30 seconds away from LOS at this time. At this time Glynn Lunney has gone around the room taking a status check with his flight control team. We look go we continue to stand by and this is Apollo control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 685400, CST 3:45a 211/1

PAO Apollo Control, Houston, 68 hours, 54 minutes now into the flight. Our Apollo 8 spacecraft now 529 nautical miles away. Velocity reading 7286 feet per second. Jerry Carr has spoken with the crew and we're going to pick up that conversation now.

CAPCOM Apollo 8, Houston...LOS all systems GO, over.

SC Thank you you're still...

CAPCOM Roger, Frank. The custard *Jim* ~~Gemini~~ oven at 350, over.

SC No comprendo. Roger.

PAO This is Apollo Control, Houston. We're now some 3 minutes, 35 seconds away from LOS and standing by. Apollo Control Houston, 2 minutes, 50 seconds away from time of LOS now. Our distance away from the moon 460 nautical miles, velocity 7417 feet per second. Here in Mission Control - we're standing by as certainly a great deal of anxiety at this moment as in the next 2 and 1/2 minutes we will not talk with the crew for some period of time. Acquire at 36 minutes. So at 68 hours, 55 minutes continuing to monitor this is Apollo Control. Two minutes away now from LOS.

CAPCOM LOS.

SC Roger.

PAO 418 nautical miles away from the moon. Our velocity continuing to build up, 7518 feet per second continuing to climb. One minute, 30 seconds away now from LOS. Our guess is it's away from the moon 401 nautical miles. Velocity reading 7535 as we continue with this flight of Apollo 8. One minute away now from LOS.

CAPCOM One minute to LOS. all systems GO.

SC Roger, going to command reset tapere-corder forward low bit rate.

PAO Current altitude away from the moon 377 nautical miles.

SC *(ANDERS)* Thanks a lot. *Jim*

CAPCOM We'll see you on the other side.

PAO You heard the remark of Jim Lovell. thanks a lot troops so we'll see you on the other side. We have a correction to that voice from the spacecraft. That was Bill Anders. *Jim*

SC Roger.

PAO Bill Anders again with that remark, Roger. When to advise to 10 seconds LOS, you're on your way. We've had lost of signal with Apollo 8 at 68 hours, 58 minutes, 45 seconds. We will watch with continuing interest the AOS clock here in Mission Control. This is Apollo Control, Houston. 69 hours now into the flight of Apollo 8. We're going to pick up that transmission when

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Jerry Carr advised that we were LOS. Apollo 8, Houston,
2 minutes until LOS.

CAPCOM Apollo 8, Houston, 1 minutes until
LOS. All systems Go. Roger, safe journey, guys.

SC (A-12) Thanks a lot, troops. We'll see you
on the other side.

CAPCOM Apollo 8, 10 seconds to GO. You're GO
all the way.

SC Roger.

PAO This is Apollo Control, Houston. They're
traveling over the back side of the moon now. Velocity
reading here 7777 feet per second at the present time we
show an altitude above the moon of 293 nautical miles. So
at 69 hours, 1 minute, this is Apollo Control Houston.

END OF TAPE

PAO COM Apollo Control, Houston, 69 hours, 3 minutes now into the flight of Apollo 8. Apollo 8 now traveling over the backside of the moon. Time of ignition for our service propulsion system engine burn, 69 hours, 8 minutes, 52 seconds. Some - a little over four minutes away from this time. Apollo 8 will perform its burn in the guidance and navigation mode using the onboard computer and the DSKY - the display keyboard. To do this, the crew will key into one of their guidance programs on the DSKY. The service propulsion system gimbal is trimmed before the burn. Maneuver-to-burn altitude has already been accomplished. A good deal of data will be flashed on the DSKY; and then in the final thirty seconds, a countdown to time of ignition will come up on its face. And at time of ignition, minus seconds - five seconds - comes what, in effect, is a final GO-NO GO. The computer, in effect, asks the crew, "May I proceed?" To execute the burn, one of the crew, probably Spacecraft Commander Frank Borman, must punch the "proceed" key. So, at 69 hours, 4 minutes, 55 seconds into the flight of Apollo 8, this is Apollo Control.

END OF TAPE

APOLLO 8 MISSION COMMENTARY 12/24/68, GET 690800, CST 4:00 a 213/1

PAO This is Apollo Control Houston. 69 hours 8 minutes. Apollo 8 is less than 30 seconds away from the planned time of lunar orbit insertion burn. The crew should now be looking at the count down to ignition on the face of their display and keyboard. Heads down, they should be seeing the feature, the rugged features over the back side of the moon, moving below them at a high rate of speed. Standing by, this is Apollo Control. (pause) ... we will not know until we re-acquire their retrograde burn with the service propulsion system engine should be progressing now. Assuming no last minute complications. We will not know, however, until we acquire. (pause) Apollo Control Houston. Now we are in our period of the longest wait. Thus far in the mission, we are 19 minutes 50 seconds from acquisition at this time. (During Mission Control Simulations, this was a good time for coffee breaks. For the flight controllers. But that is not true today.) Continuing to monitor, this is Apollo Control Houston. ?

END OF TAPE

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228-1

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 691445, CST 406a 214/1

PAO This is Apollo Control Houston, 69 hours 15 minutes now into the flight. Our display readings now show an altitude of 86 nautical miles, a velocity reading of 8355: this last reading assuming we did not have a burn. Our AOS at this time 16 minutes 40 seconds. If for any reason the service propulsion system engine did not burn, we would see the spacecraft perhaps 10 minutes before normal acquisition time so here in Mission Control continuing to monitor, this is Apollo Control Houston.

END OF TAPE

? 228-1

1P. initial power 226

"Miller" crater 228/2

"Moon is essentially gray" 218/1

under a small? 228/2

2. Stop Brown, hill, Auburn 228/2

180° roll to obtain S-band
Contact 216/1

Apollo 8 Mission Commentary, 12/24/68. 692200, 4:19am, 215/1

PAO Houston here in mission control center. Cliff Charlesworth getting our - correction there. - Glvnn Lunnev, we should say, getting ready to talk to his flight ~~control~~ team. Our time of acquisition clock now reading 9 minutes 45 seconds and were continuing to watch it. Mean while our ~~top clock~~ is counting forward now reading 25 seconds. The top clock was used to denote acquisition time if we had a no burn situation. We will continue to monitor here in mission control center.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, 692745 CST 4:18a 216/1

PAO Apollo Control, Houston, just under four minutes away now from our time of acquisition with Apollo 8. Apollo 8 still out of range, should be rolling now 180 degrees shortly, if not already, to establish S-band high-gain antenna communications with the ground. We're standing by in Mission Control. This is Apollo Control, Houston. Mark. Three minutes from predicted time of acquisition. Standing by. Apollo Control, Houston. Mark, two minutes from predicted time of acquisition. Apollo Control, Houston. Mark one minute from predicted time of acquisition. Apollo Control, Houston. Jerry Carr has placed a call. We are standing by. We've heard nothing yet, but we are standing by. Apollo Control, Houston. We've acquired signal but no voice contact yet. We are standing by. Apollo Control, Houston. We are looking at engine data, and it looks good, tank pressures look good. We have not talked yet with the crew, but we are standing by. We got it! We've got it! Apollo 8 now in lunar orbit. There is a cheer in this room! This is Apollo Control, Houston switching now to the voice of Jim Lovell.

SC 560.5. Good to hear your voice.

CAPCOM Apollo 8, this is Houston. Verify your evaporator water control in AUTOMATIC. Over.

PAO This is Apollo Control, Houston. We have a crew report of an orbit of 60.5 nautical miles by 169 nautical miles. Standing by, continuing to monitor. This is Apollo Control.

CAPCOM Apollo 8, Houston. Over.

CAPCOM Apollo 8, Houston. Over.

END OF TAPE

*didn't G + N
(Mike) as one of the
others say "AOS"
before Lovell announced*

*to Borman?
see 217-2
Lovell is correct
tape 46 p 5
into frame*

CAP COM Apollo 8. Apollo 8. This is Houston.
Houston. Over.

SC Roger. Houston, we read you loud and clear. How do you read us?

CAP COM Apollo 8. This is Houston. Reading you loud and clear now. And verify your evaporator water control panel switch to the AUTO position. Over.

SC Roger. I am sure it is in AUTO.

CAP COM Roger.

SC Purge status report as follows: burn on time. burn time 4 minutes 6-1/2 seconds, VGX minus 1.4 attitude is nominal, no trim, TGY was zero, TGB was plus .2, Delta VC was minus 20.2, orbit 169.1 by 60.5.

CAP COM Apollo 8. Houston. Roger, the burn on time. burn time of 460.5. VGX was minus 1.4, Apollo 8. Houston. Verify your EVAP water control on panel 382 is AUTO. Your EVAP out temperature is high. Over.

SC Roger. Stand by. Houston. Apollo 8. Roger. Primary EVAP is AUTO, H2 flow AUTO, do you recommend activating the secondary water boiler?

CAP COM Roger. Copy. Stand by.

PAO This is Apollo Control Houston. The conversation taking place is with Bill Anders aboard the spacecraft. *correct*

CAP COM This is Houston. Re-verify manual valve on panel 382 evaporator water control automatic. Over.

SC Roger. Verified.

CAP COM Apollo 8. This is Houston. Recommend you activate your secondary water evaporator.

SC Secondary EVAP coming on line.

CAP COM Roger.

PAO Apollo Control Houston. Ground data closely coincides with that aboard the spacecraft.

CAP COM ... up your DSE and we will go to high bit rate. Over.

SC Roger.

CAP COM Apollo 8. This is Houston. And I will continue my readback of the burn status report. Copied VGX zero, VGY zero, VGZ 1.2, Delta VCharlie minus 20.2. Over.

SC Stand by while I get my chart out again. ... ZG was .2.

CAP COM Roger. Understand. .2 on VGZ.

SC Houston. This is Apollo 8. We are on malfunction 1 or 6, going through step 1 to step 2. Over.

CAP COM Apollo 8. Houston. Roger. Copy.

SC Correction. That is to step 4.

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CAP COM Roger. Copy. To step 4.
SC Now to step 13.
CAP COM Roger. Step 13.
PAO Apollo Control Houston. What you are hearing here is checkout procedure of the environmental control system. The voice, principally from the spacecraft, that of Bill Anders. The systems engineer member of the team aboard.
SC Now to step 14.
CAP COM Houston. Roger.
SC Looks like the boiler dried out somewhere along the line.
CAP COM Roger, Bill.
PAO Apollo Control Houston. Our ground readings on this orbit 168 nautical miles and apolune perilune of 60.4 nautical miles.
SC This is Apollo 8. I would like to confirm that burn status report. VGX was minus 1.4. VGY was 0. VGZ .2 minus .2 that is. Delta VC was minus 20.2.
CAP COM Apollo 8 --
SC -- perigee 169.1, perigee 60.5.
CAP COM Apollo 8. This is Houston. I will read back again. The burn was on time, 4 minutes and 6 and 1/2 seconds, VGX minus 1.4, trim nominal, VGY 0, VGZ minus 0.2, Delta V Charlie minus 20.2. Over.
SC That's Roger. *Borman*
CAP COM Roger. And we copy your apogee and perigee.
SC Steam pressure is coming up. *(Anders)*
CAP COM Roger Bill.
PAO This is Apollo Control Houston. So you've have the first status report from an Apollo crew in lunar orbit. The unmanned lunar Orbiter spacecraft traversed the moon, perhaps over 10,000 times. but this is the first man aboard, in this case Frank Borman, reported to his compatriots here on earth.

END OF TAPE

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